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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,218	01/15/2002	Karsten Dede	57275US002	6396

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EXAMINER
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MCCLENDON, SANZA L

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 07/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/050,218

Applicant(s)

DEDE ET AL.

Examiner

Sanza L McClendon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 36-44 is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-17, 22-24, 28-30, 32-35 and 45 is/are rejected.
- 7) ☒ Claim(s) 14, 18-21, 25-27 and 31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6/2002.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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DETAILED ACTION

*Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Dower et al (6,151,433 and 6,085,004).

Dower et al teaches photocurable adhesive compositions useful for bonding optical fiber connectors. Said photocurable adhesive comprises a photoinitiator system comprising at least one photoinitiator, at least one sensitizer, (see column 5, lines 63-64)\* and an electron donor (see column 6, lines 63-67). Said electron donor is soluble in the polymerizable adhesive composition, has a good shelf stability, and is capable of increasing

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\* The column and lines for the rejection are taken from Dower et al US 6,151,433

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the speed of cure or depth of cure of the photocurable adhesive composition upon exposure to light of an desired wavelength—column 6, lines 63-67. Said donor has an oxidation potential greater than zero and less than or equal to the oxidation potential of p-dimethoxybenzene—column 7, lines 1-5. This anticipates the electron donor limitation of claim 1. With respect to the photoinduced potential of the photoinitiator system as defined in claim 1, the examiner contends that this limitation should be inherent to the photoinitiator system taught by Dower et al.

3. Claims 1-4, 7-13, 15-17, 22-24, and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Cole et al (6,331,080).

Cole et al teaches photocurable adhesive compositions useful for bonding optical fiber connectors. Said photocurable adhesive comprises a photoinitiator system comprising at least one photoinitiator, at least one sensitizer, (see column 5, lines 50-51) and an electron donor (see column 6, lines 60-67). Said electron donor is soluble in the polymerizable adhesive composition, has a good shelf stability, and is capable of increasing the speed of cure or depth of cure of the photocurable adhesive composition upon exposure to light of an desired wavelength—column 6, lines 60-67. Said donor has an oxidation potential greater than zero and less than or equal to the oxidation potential of p-dimethoxybenzene—column 7, lines 1-5. This anticipates the electron donor limitation of claims 1, 10-13, and 16-17. With respect to the photoinduced potential of the photoinitiator system as defined in claim 1, the examiner contends that this limitation should be inherent to the photoinitiator system taught by Cole et al.

Said photocurable adhesive, additionally, comprises at least one epoxy resin, at least one (meth) acrylate monomer, and a polyol compound. Said (meth) acrylate monomers can be found in columns 4-5, said polyol compounds can be found in columns 4-5, and said epoxide resins can be found in column 4, wherein silicon resins containing epoxide groups are taught. The composition anticipates claims 2 and 24, wherein said epoxide resin anticipates claims 3-4 and the silicon containing epoxide resin anticipates claim 5. The methacrylate compound anticipates claim 22 and the polyol anticipates claim 223. Said photoinitiator can be an onium salt initiator, such as iodonium salts, preferably diphenyliodonium chloride, diphenyliodonium hexafluorophosphate and diphenyliodonium tetrafluoroborate—see column 8,

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lines 11-13. These anticipate at least one compound in the Markush group of claim 7. Said sensitizers are include the compounds listed in column 5, lines 65 to the end. These anticipate claim 8. The preferred classes are ketone sensitizers, such as alpha-diketone sensitizers—see column 6, lines 40-50. This anticipates claim 9.

With respect to the photoinduced potential of the photoinitiator system as defined in claim 1, the examiner contends that this limitation should be inherent to the photoinitiator system taught by Cole et al because said photocurable composition comprises the same components. With respect to claim 45, it is believed that said photocurable composition as taught by Cole et al anticipates the method taught therein. Cole et al teaches curing said photocurable adhesive using actinic radiation, wherein said composition comprises a cationically polymerizable resin (epoxide) and the same initiator system, therefore reducing the time needed to polymerize a cationically polymerizable composition is inherent to the curing steps taught by Cole et al.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Oxman et al (4,828,583 and 4,735,632).

Oxman et al teaches coated abrasive binders containing ternary photoinitiator systems. Said ternary photoinitiator system comprises an arylidonium salt initiator, a sensitizer compound, and an electron donor, wherein said donor has an oxidation potential that is greater than zero (0) and less than or equal to that of p-dimethoxybenzene (1.32 volts vs. S.C.E.)—see abstract. With respect to the photoinduced potential of the photoinitiator system as defined in claim 1, the examiner contends that this limitation should be inherent to the photoinitiator system taught by Oxman et al because said photocurable composition comprises the same components.

5. Claims 1-13, 16-17, 22-24, 28-30, 32-35 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Oxman et al (6,187,836 B1) as evidenced by Dower et al (6,085,004).

Oxman et al teaches compositions comprising cationically active and free radically active functional groups for use in dental compositions, such as adhesives, sealants, and composites—see column 1, lines 35-41. Oxman et al, additionally, teaches a photoinitiator system for curing said compositions, and hydroxyl-containing materials can be added to said

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composition. Said composition comprises epoxide resins and/or blends of epoxide resins in combination with materials having free radically polymerizable functional groups, such as acrylates and methacrylates. Said free radically polymerizable materials anticipate claims 22 and 34. Said epoxide resins can be found in columns 8-9, wherein silicon-containing epoxide resins are taught which, anticipates claims 3-6 and 28-30. The hydroxyl-containing material anticipates claims 23 and 35. Said photoinitiator system comprises an onium salt, such as an iodonium salt, a cationic polymerization modifier, and a sensitizer compound. Said iodonium salts can be found in column 5, lines 1-44, wherein those listed in claims 7 and 33 can be found. The cationic polymerization modifier is a compound having a  $P_{kb}$  values of less than 10 and can be found in column 6, lines 35-58, wherein ethyl 4-(dimethylamino) benzoate is preferred. These anticipate claims 11-13. The cationic polymerization modifier is a compound that will delay the onset of cationic polymerization but upon initiation will increase the rate of polymerization relative to the rate of polymerization in absence of the modifier—see column 7, lines 20-25. This anticipates claim 10. It is known from Dower et al that ethyl 4-(dimethylamino) benzoate has an oxidation potential greater than zero (0) and less than or equal to that of p-dimethoxybenzene—see the examples of Dower et al (6,085,004). Thus, claims 16-17 are anticipated. The sensitizer compound is a visible light sensitizers, such as  $\alpha$ -diketones—see column 7, lines 40 to the end. This anticipates claims 8-9 and 32. Oxman et al teaches that the photoinduced potential for the initiator system is less than 3-dimethoxybenzoic acid in a standard solution of  $2.9 * 10^{-5}$  moles/g diphenyliodonium hexafluoroantimonate and  $1.5 * 10^{-5}$  moles/gram camphorquinone in 2-butanone. This anticipates the claim limitations of claims 1, 2, 28 and 45. Said usage for said compositions appears to anticipate claims 24, and 28. Oxman et al teaches combining said components of the composition and curing using visible light radiation, wherein the examiner contends claim 45 is anticipated. Claim 45 is anticipated because Oxman et al teaches a similar-type composition and cures with actinic radiation, therefore the reduction of polymerization time for cationically polymerizable resins is inherent to the composition.

*Allowable Subject Matter*

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6. Claims 14, 18-21, 25-27, and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach the pKb of an electron donor compound in a photopolymerization composition comprising a cationically polymerizable material and a ternary photoinitiator system. In addition, the prior art fails to teach the compounds and/or compound-types of claims 18-21 and 31 as electron donor compounds in compositions comprising a cationic material and/or an epoxy resin combined with a ternary photoinitiator system. The prior art fails to teach such composition used in applications such as those found in claims 25-27.

8. Claims 36-44 are allowed.

9. The following is an examiner's statement of reasons for allowance: the prior art fails to teach photopolymerizable dental composition comprising an epoxy resin combined with a ternary photoinitiator system, wherein the electron donor compound is a N-alkyl carbazole compound having an oxidation potential greater than zero but less than that of p-dimethoxybenzene when measured verses a S.C.E. The prior art fails to, additionally, teach a photopolymerizable dental composition comprising an epoxy resin combined with a ternary photoinitiator system, wherein said ternary photoinitiator system comprises an iodonium salt selected from the group in claim 42, an alpha diketone sensitizer, and electron donor selected from the group in claim 42. Wherein both photopolymerizable dental compositions have a photoinduced potential less than 3-dimethoxybenzoic acid in a standard solution of  $2.9 \times 10^{-5}$  moles/g diphenyliodonium hexafluoroantimonate and  $1.5 \times 10^{-5}$  moles/gram camphorquinone in 2-butanone.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

*Conclusion*

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanza L McClendon whose telephone number is (703) 305-0505. The examiner can normally be reached on Monday through Friday 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (703) 308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0657.

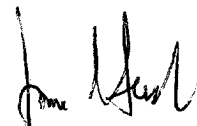
Sanza L McClendon

Examiner

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SMc

July 24, 2003

  
James L. Seidleck  
Supervisory Patent Examiner, Jr.  
Technology Center 1711